Definition: Non-Precursor Organic Compounds

Introduction

This document provides a list of Non-Precursor Organic Compounds (NPOC) compounds which are compounds having negligible photochemical reactivity.

Table of NPOC

The list of negligible photochemical reactivity compounds is provided in 40 CFR 51.100(s)(1). This list has been arranged in a more convenient format in the attached Table I.

Contact

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Approval

Name & Title	Signature	Date
Brian Bateman, Director of Engineering	**Signed by Brian Bateman**	2/28/2008

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Definition: Non-Precursor Organic Compounds, Continued

TABLE 1. NON-PRECURSOR ORGANIC COMPOUNDS (NPOC)

EPA has determined that the following organic compounds have negligible photochemical reactivity (§51.100(s) last amended 1-18-07); consequently, these compounds are NPOC's by the District's definition.

Formula or Shorthand	**Compound Name and Synonyms (See NOTE 1)**	**Common Product Names**
CH_4	methane	
C_2H_6	ethane	
CH_3COCH_3	acetone	
$CH_3CO_2CH_3$	methyl acetate	
CHO_2CH_3	methyl formate	
$CH_3COOC(CH_3)_3$	t-butyl acetate (TBAc) **SEE NOTE 2**	
CH_2Cl_2	methylene chloride (dichloromethane)	
$C_2H_3Cl_3$	1,1,1-trichloroethane (methyl chloroform)	
C_2Cl_4	perchloroethylene (tetrachloroethylene)	
CFC-11	trichlorofluoromethane	
CFC-12	dichlorodifluoromethane	
CFC-113	1,1,2-trichloro-1,2,2-trifluoroethane	Freon
CFC-114	1,2-dichloro 1,1,2,2-tetrafluoroethane	
CFC-115	chloropentafluoroethane	
HCFC-22	chlorodifluoromethane ($CHClF_2$)	
HCFC-31	chlorofluoromethane (CH_2ClF)	
HCFC-123	1,1,1-trifluoro 2,2-dichloroethane	
HCFC-123a	1,2-dichloro-1,1,2-trifluoroethane	
HCFC-124	2-chloro-1,1,1,2-tetrafluoroethane	
HCFC-141b	1,1-dichloro 1-fluoroethane	
HCFC-142b	1-chloro 1,1-difluoroethane	
HCFC-151a	1-chloro-1-fluoroethane	
HCFC-225ca	3,3-dichloro-1,1,1,2,2-pentafluoropropane	
HCFC-225cb	1,3-dichloro-1,1,2,2,3-pentafluoropropane	
HFC-23	trifluoromethane	
HFC-32	difluoromethane	
HFC-125	pentafluoroethane	
HFC-134	1,1,2,2-tetrafluoroethane	
HFC-134a	1,1,1,2-tetrafluoroethane	
HFC-143a	1,1,1-trifluoroethane	
HFC-152a	1,1-difluoroethane	
HFC-161	ethylfluoride	
HFC-227ea	1,1,1,2,3,3,3-heptafluoropropane	
HFC-236ea	1,1,1,2,3,3-hexafluoropropane	
HFC-236fa	1,1,1,3,3,3-hexafluoropropane	
HFC-245ca	1,1,2,2,3-pentafluoropropane	
HFC-245ea	1,1,2,3,3-pentafluoropropane	
HFC-245eb	1,1,1,2,3-pentafluoropropane	
HFC-245fa	1,1,1,3,3-pentafluoropropane	
HFC-365mfc	1,1,1,3,3-pentafluorobutane	
HFC-43-10mee	1,1,1,2,3,4,4,5,5,5-decafluoropentane	Dupont Vertrel XF

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Definition: Non-Precursor Organic Compounds, Continued

TABLE I. NON-PRECURSOR ORGANIC COMPOUNDS (NPOC), continued

Formula or Shorthand	Compound Name and Synonyms (See NOTE 1)	Common Product Names
$C_3F_7OCH_3$	1,1,1,2,2,3,3-heptafluoro-3-methoxy-propane	HFE-7000
$C_4F_9OCH_3$	1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxybutane (perfluoro-n-butyl methyl ether or HFE's)	part of 3M HFE-7100
$(CF_3)_2CFCF_2OCH_3$	2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane (perfluoro-isobutyl methyl ether or HFE's)	part of 3M HFE-7100
$C_4F_9OC_2H_5$	1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorbutane (perfluoro-n-butyl ethyl ether or HFE's)	part of 3M HFE-7200
$(CF_3)_2CFCF_2OC_2H_5$	2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane (perfluoro-isobutyl ethyl ether or HFE's)	
$C_5F_{10}OCH_3CF_3$	(1) 1,1,1,2,2,3,4,5,5,5-decafluoro-3-methoxy-4-trifluoromethyl-pentane	HFE-7300
$C_6F_{12}OC_2H_5CF_3$	3-ethoxy-1,1,1,2,3,4,4,5,5,6,6,6-dodecafluoro-2-(trifluoromethyl) hexane	HFE-7500
PCBTF	Parachlorobenzotrifluoride	
	cyclic, branched, or linear completely methylated siloxanes	
FC or PFC	perfluorocarbon compounds which fall into these classes: (i) Cyclic, branched, or linear, completely fluorinated alkanes; (ii) Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations; (iii) Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and (iv) Sulfur containing perfluorocarbons with no unsaturations and with sulfur bonds only to carbon and fluorine.	3M PF-5060

Note 1. This list of compounds was rearranged from the original Federal Register text (40 CFR 51.100(s)(1)) for easier identification. The compounds are not listed in the order approved nor in order of photochemical reactivity.

Note 2. These compounds are excluded from VOC emissions and VOC content limits only, but record keeping and reporting requirements still apply. Also, these compounds must still be included in inventories and ozone modeling per 40 CFR 51.100(s)(5).

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Definition: Non-Precursor Organic Compounds, Continued

TABLE II. PROPOSED NON-PRECURSOR ORGANIC COMPOUNDS

EPA has proposed to exclude the following compounds from their definition of VOC as published in the Federal Register on 10-1-2007. If EPA has published their intent to exclude a compound from the definition of VOC, the compound should be considered to be an NPOC for the engineering evaluation, but engineers should add a permit condition requiring a modification of the source if EPA withdraws the exclusion during the public comment period.

Formula or Shorthand	Compound Name and Synonyms	Common Product Names
$C_4H_6O_3$	propylene carbonate	
$CO(OCH_3)_2$	dimethyl carbonate	

TABLE III. COMPOUNDS UNDER GOING EPA REVIEW FOR PHOTOCHEMICAL REACTIVITY

Manufacturers of the following compounds have petitioned EPA to list these compounds as negligibly reactive and to exclude them from EPA's definition of VOC. This list was updated by EPA on 9-30-99. These compounds should be considered to be POC's until EPA publishes their decision about the photochemical reactivity of the compounds in the Federal Register.

Formula or Shorthand	Compound Name and Synonyms	Common Product Names
COS	carbonyl sulfide	
CS_2	carbon disulfide	
CH_3Br	methyl bromide (bromomethane)	
$BrCH_2Cl$	chlorobromomethane	
$CH_3CH_2CH_2Br$	1-bromopropane (n-propyl bromide)	
$C_{12}H_{26}$ to $C_{18}H_{38}$	n-alkanes (C12 – C18)	
	Technical white oils	
$C_6H_5F_3$	benzotrifluoride (toluene trifluoride or trifluoromethylbenzene)	
ClHC:CHCl	trans-1,2-dichloroethylene (acetylene dichloride or dichloroacetylene)	
	dimethyl succinate	
	dimethyl glutarate	
CH_3CN	acetonitrile (methyl cyanide)	
$CH_3C_6H_3(NCO)_2$	toluene diisocynate (TDI)	
$CH_2(C_6H_4NCO)_2$	methylene diphenyl diisocynate (MDI)	